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A
PRACTICAL TREATISE
ON
SEA-SICKNESS:
ITS
SYMPTOMS, NATURE AND TREATMENT.

BY
GEORGE M. BEARD, A.M., M.D.,

FELLOW OF THE NEW YORK ACADEMY OF MEDICINE; OF THE NEW YORK
ACADEMY OF SCIENCES; VICE-PRESIDENT OF THE AMERICAN ACADEMY
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ATION; OF THE AMERICAN MEDICAL ASSOCIATION; OF THE
NEW YORK NEUROLOGICAL SOCIETY; AUTHOR OF "NERV-
OUS EXHAUSTION," (NEURASTHENIA); "OUR
HOME PHYSICIAN," ETC



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PREFACE.

THIS Treatise is not a theory, or dream, but represents extensive experiments of the author, and much experience at sea, on long and short voyages, and in different climates.

The philosophy advocated in this work is that Sea-Sickness is a *functional disease of the central nervous system*. The treatment proposed is in harmony with the philosophy, and has already been tested, only by myself, but by a number of other medical observers, with most satisfactory results.

The position taken is that sea-sickness, like any other form of sickness, is an evil to be avoided, and that by the plan of treatment here proposed it can, in the majority of cases, be prevented or greatly relieved.

It is designed to make the work clear and practical, and to adapt it to meet the wants of both practitioners of medicine and travelers by the sea.

There are certain questions relating to the details of treatment, which, it is hoped, further experience of those who shall become interested in the subject, may help to solve.

1. Whether any other variety of bromide or any combination of bromides may be preferable, in any respect, to the bromide of sodium herein recommended.

At the present time I am using the bromide of manganese in other forms of nervous disease, but have had no experience with it in sea-sickness. I also make frequent use of combinations of all the bromides in the treatment of nervous exhaustion.

2 Whether some other powerful nerve sedative may not, in some cases, take the place of the bromides.

Hyosciamia, in doses of from one one-hundredth to one-quarter of a grain, by the mouth or hypodermically, beginning with the smaller doses, offers a fair field for experiment. Its great value as a sedative for temporary effects in mania and other nervous conditions, is now well established. Idiosyncrasies that do not well bear bromization might, not unlikely, find satisfactory relief in hyosciamia, or some other sedative.

Experiments of this kind should only be made, in the first instance, under medical advice.

3. What percentage of individuals, who fully carry out the plan of treatment herein recommended, will obtain complete immunity or substantial relief.

Any reports from trustworthy sources, either of failure or success, will be thankfully received.

G. M. B.

13 WEST 29TH STREET, NEW YORK,
May 1, 1880.

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SEA-SICKNESS.

CHAPTER I.

SEA-SICKNESS A FUNCTIONAL DISEASE OF THE CENTRAL NERVOUS SYSTEM.

The importance of the subject.—Sea-sickness is a subject of extreme practical importance. The amount of suffering caused by this disease is beyond estimate. The physicians and the laity have grappled with the problem for centuries, and have given it up as beyond solution ; and those who suffer resign themselves to it as something entirely beyond human control. It is so serious that, as a relief and a necessary reaction, it becomes a joke, and men try to forget its evils by laughing about them. The number of those who are obliged to go upon the sea for subsistence, and the number who are obliged to travel, is very great, and is increasing every year. The number of those who travel for pleasure is also enormously great, but it would be at least ten-fold greater were it not for

the horrors of sea-sickness. The Atlantic travel would be certainly multiplied many fold were it known that sea-sickness is, in a majority of cases, unnecessary. And when we remember that a sea voyage is one of the best possible hygienic resources for the neurasthenic, we see the great loss which the nervous sufferers of civilization experience in not being able to go to sea. In nearly all the letters that I receive from my scientific friends in Europe—in England, France and Germany—the invitations to visit us in America are met with the statement that nothing prevents them but the dread of sea-sickness, of which they have some mild suggestions crossing the channel. Undoubtedly ten times as many Europeans would visit this country as now do, were it not for this fear. It is my hope that the publication of this work may be the means of increasing the amount of international travel, which is of incalculable service to humanity in ways innumerable, physiologically and therapeutically, as well as financially.

More injurious than beneficial.—It is a widely prevalent delusion, and one that probably will never die till the sea itself dries up, or the land sinks out of sight beneath the waters, that sea-sickness is a beneficial disease, and that it is good for one to suffer, more or less, from it on a voyage.

I once met a literary gentleman, who, on a voyage across the Northern Atlantic, tried every means to make himself sea-sick, in order that he might get the benefit of the trip, and failed, and was utterly disappointed. He smoked strong cigars in great excess, exposed himself in every way, and sought eagerly the symptoms that most people dread and flee from.

In all this belief there is this basis of truth, that any acute disease of any kind, as typhus or typhoid fever, may clear out the system and work a change in the constitution, which may be of service to the patient for years afterwards. This, however, is no more true, indeed, far less true, of sea-sickness than of almost any other disease. After one comes out from the attack of sea-sickness he feels better ; he is, of course, better than he was when he was sick, if he were not he would still be sick ; and the tonic effects of the sea air and leisure combined make him better still ; but, to one person who has this experience, there are numbers who are weakened, more or less exhausted by sea-sickness, and deprived of a portion of the good that the voyage would have done them if they had been free. There is, on scientific grounds, no more reason for seeking an attack of sea-sickness than for seeking an attack of typhoid fever,

Author's Experience.—My first experience with this interesting disease was during our late war, when I acted for one year and a-half as assistant surgeon in the navy. Nine months consecutively, of these eighteen months, our gunboat was anchored at sea, during which time I did not once go ashore. I took two voyages from New Orleans to New York, have taken a number of sea trips along our coast, and have made four voyages across the Northern Atlantic, between America and Europe, and across the English channel.

I mention these facts of autobiography first of all, in order to show that the conclusions presented in this essay have been wrought out by personal experience and extended observations, from my very first attack of sea-sickness off Cape Hatteras down to the last trips on the Atlantic during the present year. I have taken special interest, as opportunity appeared, to study the nature and treatment of this disease, both on myself and on my fellow-sufferers.

My studies of the nervous system during the same period aided me in the investigations of this special form of nervous disorder, and, I trust, without warping my judgment.

In the study of pathology one malady sheds light on another ; through diseases we learn to treat disease ; hence, through the study of the nervous

system in general, and through the special diseases of the nervous system we are able to solve, in a measure at least, the mysteries of sea-sickness. If one would study sea-sickness let him first study sick headache, hay fever, cerebral congestion, neurasthenia, and morbid conditions that are related to these. These diseases, or symptoms of disease, are, indeed, the doors that open to the secrets of sea-sickness; and the entire revolution which has been made in the philosophy and treatment of these conditions, now makes it possible for us to revolutionize and systematize the philosophy and treatment of sea-sickness.

Sea-sickness is a functional disease of the central nervous system.—The popular and even professional view has been that sea-sickness was mainly a disease of the stomach, liver and digestive apparatus; and all the treatment that has been advised, such as capsicum, calomel, and champagne, and cathartics of various sorts, and starvation and feeding, and acids and bitters, and belts around the body have been prescribed, on the theory that the disorder was in the stomach. For centuries this has been the prevailing belief of mankind among those who have occasion to go upon the sea. This mistake in reasoning was inevitable; the symptom of vomiting was the most prominent symptom of

the malady, in many cases, though not always its most annoying symptom, and it was as natural for the non-expert human mind to refer the disease to the stomach as it was, in observing the rising and setting of the sun, to infer that the earth was the centre of the universe. In sick headaches the same error was made, and only recently are we beginning to know that the symptoms of nausea and vomiting, which belongs to this disease, come from the brain; and, as a natural and very pleasant result, have learned how to relieve and break up this terribly annoying disorder.

The evidences that sea-sickness is a central, and not peripheral disease, belonging to the brain and spinal cord more than to the stomach and digestive apparatus, are both deductive and inductive; and to one familiar to the phenomena of the nervous system, in health and disease, would seem to be absolutely demonstrative.

Reasoning deductively, it would seem inevitable that any mechanical agitation of the body, such as is caused by the rolling, pitching and tremor of a ship, would affect primarily and chiefly the central nervous system, which is the centre of life, and the most sensitive to external irritation. Vomiting is one of the symptoms of concussion of the brain; in sea-sickness there is a series of mild concussions.

Here it is well to note what seems not to be

generally understood, that sea-sickness is not confined to the sea. One may be sea-sick on land ; the jolting of a carriage over rough pavement, and even on smooth country roads, in some cases, and the train motion even of the easiest and best improved cars gives rise to many of the symptoms of sea-sickness in peculiarly sensitive individuals. Likewise, the motion of swinging and rocking have, as we all know, a similar effect.

Another fact of great interest is, that sea-sickness but rarely affects the extremes of life—infancy and old age. It is the disease of active cerebral life, between fifteen and sixty-five ; the extremes on either side, the very old or the very young, being much less likely to suffer from it. In relation to this subject, it may be noted that children and the very aged rarely suffer from sick headache, or certain forms of neuralgia. It should also be noted that children are much more likely to vomit than adults ; their stomachs more readily disgorge anything that chances to disagree with them ; they are more liable to certain forms of bowel diseases, but the motion of the ship does not make them vomit, or produce nausea in the majority of cases. I have several times seen children vomit on ship-board, apparently from sympathy, seeing their friends doing so all around them, and without any previous or subsequent sickness. In

some cases, however, even young children do suffer somewhat from sea-sickness.

Most frequent and severe with the nervous and sensitive.—As a rule, on the average of a large number of cases, with individual exceptions and variations, the nervous, delicate, and finely organized, and those into whose system a vein of nervousness enters, are more liable to be sea-sick, and to suffer severely from the malady than those of an opposite temperament—the coarse, the phlegmatic, and the strong.

Comparing, under, the same conditions of ship and sea, a hundred women and a hundred men of the same age and station of life, a far larger proportion of the women will be sick, and will remain sick a longer time; this is a fact very easy to demonstrate. But there is another fact bearing on this same subject that is not so well known, namely, that Americans of both sexes, who, for climatic influences, which I have elsewhere explained, are far more nervous than the English,* suffer more from sea-sickness than the English do.

Put a hundred English men and women, and a hundred American men and women on the same steamer, and let them make the same voyage

* In my work on Neurasthenia (nervous exhaustion), and also in the "North American Review," for December, 1879, and "Atlantic Monthly," for June, of the same year.

together, and there will be more sea-sickness among the Americans than among the English. This fact I have observed in all my transatlantic voyages, and this Summer I talked of the matter with the surgeon of the Inman steamer "City of Richmond," who has had many years' experience at sea, and he told me that his observations were in accordance with mine.

Previous theories of sea-sickness.—Here I may say that the various theories which, from time to time, have been advanced relating to sea-sickness—such, for example, as that the brain is in an anemic condition, or that the symptoms are reflexed through the eyes, and may be prevented by keeping the eyes persistently closed—of these, and of all allied theories, it may be said that they do not, in any sense, account for the phenomena, and are not confirmed by the results of the treatment based upon them ; and hence very properly have not received the endorsement of any considerable number of those who are practically most familiar with the subject ; it is sufficient to dismiss them with mere mention. These theories are quite analogous to the explanations of all the phenomena of neurasthenia by cerebral anemia, or by reflex irritation through the eyes, with which the neurological world is now quite familiar. The cerebral anemia theory of sea-sickness was brought up

in order to account for the good effects that sometimes follow the administration of nitrite of amyl. This theory was a step in the right direction, partial and imperfect as it was, since it directed attention to the central nervous system, which, whether in an anemic or hyperemic condition, is the real seat of the disease. This cerebral anemia theory is, I may say, not sustained by the results of the treatment to a sufficient extent to justify our accepting it. In defense of it, it has been claimed that those who keep in a horizontal position, with their heads low, do not suffer, or rather ought not to suffer; but this speculation is negatived by the fact, that in very many cases, the first symptoms of sea-sickness come on during the night, or in the morning, owing to the coming on of rough weather while the patients are asleep. In the majority of cases there is probably more hyperemia—congestion of the brain—than anemia; but these disturbances of circulation in the brain are secondary to disturbances of innervation.*

* The general subject of the relation of innervation to circulation is discussed in chapter III. of my work on Neurasthenia.

CHAPTER II.

THE SYMPTOMS AND SEQUELS OF SESA-ICKNESS.

So far as I know, the symptoms of sea-sickness have never been fully described.* There is some reason for not having hit upon a mode of treatment at all satisfactory, but it does appear somewhat strange that the phenomena of the disease have thus far remained unknown to science. If a thousand medical students, just at the point of graduation, or a thousand physicians in practice, general or special, were called upon to describe the symptoms of sea-sickness in any considerable detail, it is doubtful whether any one, out of the thousand, would succeed ; indeed, it is not to be expected that they could succeed in giving a correct picture of this disease, since medical literature would give them

* Dr. Nelken, resident surgeon of New York State Hospital, Ward's Island, published, in 1856, a little work on sea-sickness, in which a few of the symptoms are noticed.

Some of the symptoms are also referred to briefly in Dr. Barker's interesting monograph on sea-sickness, published a few years since.

no assistance ; and if any one is to know this subject fully, he must study it for himself, with little or no aid from teachers, lecturers or literature.

I cannot here undertake to give an exhaustive list of the symptoms, but will try to note those which are most obvious and important.

Abnormal appetite.—This is sometimes one of the very first symptoms of sea-sickness. A person goes on board of the ship, walks about the deck, enjoys himself looking upon the scenery, as the shores recede from view, and on getting into rough waters he begins to feel very hungry. He fancies the sea air is doing him good already, and he feels quite sure he shall have a strong appetite for supper. If he be a novice in sea-going, he does not even suspect that the dreaded disease already has its hands upon him. He is in great haste for the meal to be ready—he cannot wait for the announcement—and when it comes, he hastens ; is the first at the table, first to begin to eat, but in a few moments is forced to leave, a miserable man. This symptom does not appear, so far as I have observed, in the later stages of the malady—it is specially a premonitory symptom, and it is quite impossible to diagnose it, to differentiate it from a normal appetite, without submitting it to the test of the presence and taste of the food.

Brain or head symptoms.—Headache of various kinds is as much a symptom of sea-sickness as nausea or vomiting. The headache of sea-sickness is sometimes precisely like that of sick headache, with or without nausea, just as sick headache may be with or without nausea. In some cases this is a premonitory symptom, or rather one of the premonitory symptoms, and in many cases the disease does not go beyond this stage, which may last through a long voyage. Pain in the back of the head and neck is not uncommon. In many cases there is a hyperæsthesia of the eye, such as we see in neurasthenia. The top and back of the head are oftentimes the seat of pain; heaviness, cerebral congestion, a feeling of pressure and fullness of the veins is a symptom, sometimes, of the most severe character, without any nausea or vomiting. Vertigo is in some cases quite annoying, though not so frequent as many other symptoms.

Hopelessness.—The world has always made sport of the despair of the sea-sick, but has not thought it worth while to study this mental phase as a symptom of the disease. The despair, the hopelessness, the indifference as to the fate of the ship and passengers, the willingness to die, the almost hope that the ship may sink—all this is as much a part

of the disease as the headache and the vomiting, or in fact any other of the phenomena attending it.

In neurasthenia the same hopelessness is observed, and it is found in those who have every objective external reason to be happy. It is while in this stage of the disease that the sick passengers declare, in substance and in absolute sincerity, that, although the whole world were converted into a diamond and given to them, they would never again go to sea. The next year these same persons shall be found making an entirely needless voyage. The philosophy of this symptom is exceedingly interesting, just as it is with nervous sufferers on land, and mainly for this reason—that it is out of all proportion to the real suffering of the patient. It is not an imaginary sorrow ; it is as real as the storms of the sea. It is a direct effect of the disturbance of the brain, and when that disturbance ceases, the patient's hopefulness returns.

Back Pain.—Pain in the back, in the upper or lower portion, between the shoulders, or the middle lumbar vertebra, is one of the results of the agitation of the ship. We may have spinal irritation, just as we may have cerebral irritation. I once saw on ship-board a physician, who complained of this symptom most of all, and I have, myself, suffered from it when at sea.

Nausea and Vomiting.—These symptoms are so familiar that it is needless to dwell upon them. They are the result of the disturbance in the central nervous system, more than in the stomach itself, although it is every way possible that the great plexuses of nerves connected with the stomach are directly operated upon by the agitation of the body, just as all the nerves of the body must be influenced in that way.

Nausea, without any vomiting, may be very prolonged for many days at sea, causing a degree of misery even greater than that experienced by many who are compelled to vomit.

Constipation.—This symptom is a very familiar one, and is a source of much discomfort and annoyance at sea. It is in all respects probable that this constipation is of a purely mechanical character, the result of the constant pounding of the nervous system, and which aggravates, without doubt, all the other symptoms.

Diarrhæa.—This condition, as a symptom of seasickness, is not so well known and recognized. It is known, however, that the two opposite conditions—diarrhæa and constipation—may result from the same conditions. Life on ship-board illustrates this most interestingly.

Neuralgic pains.—Flying neuralgic pains in the upper and lower extremities sometimes, of a distressing character, may come from the irritated nerve centers—the upper and lower part of the spine. These pains are quite similar to those observed in neurasthenia.

Chilliness and Flashes of Heat.—Creeping chills up and down the spine, and all over the body, are noticed by many victims of sea-sickness. They are also quite similar to those that neurasthenic sufferers in general experience. There is oftentimes a general chilliness, that makes much clothing necessary, both in berth and on deck.

Deficient Intellectual Control.—The inability to control the mind while at sea—the difficulty in concentrating the attention in the task of writing or reading even the most trifling fiction—the impossibility of sustained, prolonged effort of any kind—the tendency of the mind to wander and to dream, rather than to think and to plan, is to be explained partly, I think, as a symptom of sea-sickness, at least in some cases. The sea itself, the air at sea, without reference to the movement of the ship, is pleasantly sedative, in some cases almost stupefying; but any one with large experience at sea, or on the sea-shore, would claim that to visit the sea-

side where the mind is flowing directly from the ocean, is not comparable to the hypnotic and anæsthetic effects of a short trip by sea, even when not far from land. It would appear that the molecular agitation of the brain through the movements of the ship, interferes directly with mental operations far more in some cases than in others, and varying also at different times. When the sea is very rough and very high, and the ship rolls, lurches and pitches excessively, it is observed that those who have no other symptoms of sea-sickness whatever, who can go up and down, and walk the deck without nausea or headache, are in some respects, *miserable*; even old sailors complain of these symptoms at times, and are unable to apply the mind to any book, however simple or fascinating. From this experience the best disciplined minds are not free. When at home on land, they can, without friction or disturbance, carry on mental operations even while many are talking or playing about them—their faculties are so well poised, so well harmonized, that they obey the word of command; but at sea, particularly in rough weather, at a word of conversation, or interruption of the most trifling nature, they can do nothing with the intellect. Neurasthenia (nervous exhaustion) in some of its cases produces just this symptom.

Many of the greatest minds of the world have been upon the ocean, but how few great thoughts have been conceived at sea. Men of the highest genius seem to be transformed as soon as they get at a distance from land in a rolling ship. All the more worthy of notice is this fact, because the absolute leisure of the sea tempts one to devise means to while away the time. The great terror of sea-travel next to sea-sickness is monotony ; the sameness of each daily experience, coupled with the imprisonment, makes even the lovers of the sea—those who most enjoy and are most benefited by ocean voyages—count the days and hours and minutes of their release. Were it not for this impossibility of controlling the intellectual forces, a ship on a long voyage would be the best conceivable retreat for one who wishes to think, or write, or read ; but it is observed by many, if not by all, that what is read at sea is not remembered easily or long, but speedily floats out of sight and recall like the clouds in the sky. Inexperienced voyagers sometimes carry small libraries with them, but I observe that they have little use for them. I have seen the time, while at sea in sub-tropical latitudes, when the exertion of reading a “dime novel” was sufficient for a day. Habitual smokers often find that they cannot indulge as freely as on shore.

Feeling of Exhaustion.—That there should be a feeling of profound exhaustion after a long attack of sea-sickness, during which the body has been constantly agitated, and the system has been slightly nourished, is inevitable; but, the same feeling, though less profound and protracted, sometimes appears in an acute form, comparatively early in the attack, and as one of the symptoms of the malady. This feeling is common in the nervously exhausted, and in them may come and go without traceable exciting causes. From this special symptom of sea-sickness females are most likely to suffer.

Suppression of the Menses.—A very frequent phase of sea-sickness is the temporary suppression of the menses. Emigrants from Ireland, strong women with vigorous constitutions, are not infrequently troubled in this way, and this may endure for some months after landing. In some instances this suppression is only partial, but frequently causes distress to the patient.

This symptom, so far as I know, does not usually appear alone, but is more likely to occur in connection with some other symptoms of sea-sickness, although it may arise when the severer symptoms are not experienced.

Dr. Barker is quite decidedly of the opinion,

derived from his own expert observation, that travel by sea is not likely to induce miscarriage.

Sequels of Sea-sickness.—The worst fact in relation to these symptoms is, that they do not always cease with the voyage ; they may persist for weeks, and months and years, in some cases, after the sufferer has landed ; not in full force, of course, nor constantly, but intermittingly and annoyingly. A friend of mine who was sick, as he tells me, for one entire year at sea, after his return could not enter any public assemblage, or any place where the air was foul, without feeling the symptoms of sea-sickness come upon him.

It is said of the philosopher Darwin, that he has not yet recovered from the effects of sea-sickness on the ship “ Beagle,” forty years ago, and it is asserted that his invalidism is the result of sea-sickness, acting on the nervous constitution which all great thinkers have.

A feeling of dizziness for some days after landing, is common enough, even with those who are not very sea-sick, or perhaps not at all. Constipation sometimes continues for days after getting ashore, and the appetite likewise is much impaired.

Death as a Result of Sea-sickness.—Neurasthenia and anemia resulting from sea-sickness may, in rare

cases, go on to death, either at sea, or after landing. A number of cases of this kind have been reported by Barker and others, in sufficient detail to leave small chance for doubt in regard to the diagnosis. I have not myself ever met with a case of the kind, although a number of instances have been reported to me, on authority not entirely satisfactory.

There are idiosyncrasies that can never acquire a tolerance of the sea ; instead of getting accustomed to it, they only become more and more susceptible to it.

There are sailors, even officers of ships in naval and mercantile service, who are always somewhat sick at the beginning of a voyage, and others who, after being long out, will suffer during heavy gales. After I had been many consecutive months on the open sea, I would always be slightly sick if my breakfast were long delayed.

CHAPTER III.

THE TREATMENT AND HYGIENE OF SEA-SICKNESS.

The best treatment of sea-sickness is to prevent it, and the best way to prevent it is to take large doses of bromide of sodium, say thirty, sixty, and ninety grain doses, three times a day, three or four days before starting, and keeping this up while at sea, until there is well grounded reason to believe that all danger is over.

The philosophy of this treatment is, that it bromizes the central-nervous system—renders it less susceptible to the molecular disturbance of the nervous system, caused by the movements of the ship.

The bromide of sodium is preferred to the other bromides, for a two-fold reason—first, that it is less irritating to the stomach; and secondly, that it contains a larger proportion of bromine. Where the bromide of sodium cannot be obtained, or where, as in England, on account of the moisture of the air, it cannot be well kept in large quanti-

ties, I should use the bromide of potassium, or ammonia, or calcium, or a combination of them ; but only as a second choice, inasmuch as many of those liable to sea-sickness have sensitive stomachs, which require to be treated with a certain reverence and caution.

This large dilution is advisable in all cases where there is not a special intolerance of water, for the reasons that the taste of the sodium is thereby disguised, so that, indeed, the solution tastes very much like some of the popular mineral waters, and also that it is less disturbing to the stomach. It is essential that whatever is given for sea-sickness should be as mild, and as little disagreeable as possible. Ice-cold, or at least cold, water disguises the taste more effectually than warm or tepid ; but it is not important to have the temperature different from what is most readily accessible.

Bromide of potassium, in moderate doses during the attack, had been recommended by Dr. Barker, in his work on sea-sickness, but the use of this remedy as a preventive of sea-sickness, by taking it before embarkation, was first suggested by that most original and active medical observer, Dr. F. D. Lente, in his excellent pamphlet on "The Constituents of Climate, with Special Reference to the Climate of Florida" (1878). He recom-

mended the bromide of potassium, or sodium in half-a-drachm doses.

There are very few persons so sensitive that they cannot take large doses of bromide of sodium when freely diluted. For the purpose of preventing seasickness, I do not weigh out the bromides, at least when I use it myself, under my personal supervision, but dissolve all the way from half a teaspoonful to a teaspoonful of the salt in a glass of water—preferably cold water.

Idiosyncrasies against bromides, like idiosyncrasies against other drugs, are, it is true, met with, now and then.

I once gave one hundred grains of bromide of potassium, in divided doses, in the space of two hours, to a patient of a nervous temperament, who was, for several reasons, in a specially exhausted condition. The effect was to produce acute bromism, beginning with giddiness and a reeling gait; and in less than an hour from the time the medicine was taken, the patient was unable to walk alone, and was for two hours unconscious, with muscular spasms that required vigorous treatment by electricity, ice at the back of the neck, and bottles of hot water at the feet. This patient was not seasick, she was simply nervous, and the bromide was given merely to calm the nerves. The bad effects were temporary, or at least passed away in a few

days, but very often indeed I have given doses fully as large, if not larger, even to nervous persons, without producing any such effects, and, so far as I know, there is no case recorded of such a dose of bromide producing so rapid and powerful results. In this case, the effect was more noteworthy from this fact—she had been accustomed to take bromide, in more moderate doses, and therefore the imagination had no influence.

I have heard also, from direct and good authority, of a lady who occasionally had attacks of epilepsy, and was directed to take bromides—in what doses I do not know ; but she took them systematically and persistently, without reference to any evil effects, with the idea that she would soon attain tolerance of the remedy, and obeyed the orders of her physician so rigidly that she died—taking the medicine till the latest gasp.

Cases like these of idiosyncrasy are very rarely found ; indeed, these two cases and one other case are the only ones I know of where serious temporary effects, or fatally terminating effects, have followed the use of this remedy.

For nearly all the members of the human race above the age of twelve or fifteen, it is probably entirely safe to begin with thirty grains of bromide of sodium, and to increase and keep up the action of the remedy until there is a weakness of the

limbs, a dullness, a stupor, a tendency to sleep by day and by night, to fall to sleep easily at any time, which indicate that the system is becoming bromized, that is, in a state where there is little likelihood of being sea-sick. In some cases a feeling of great weakness comes on before the disposition to sleep.

The failures that come from the use of bromides in sea-sickness are the result of these two factors :

First—The beginning too timidly, in doses of ten, fifteen, or twenty grains. This is mere playing with the remedy, and does but little, if any good, with sea-sickness. Anything short of mild bromization is useless. The dose is not to be considered so much as the effect—*bromization*.

Secondly—The waiting until sea-sickness appears before the remedy is given. The bromides are to be taken before we step on board or before sailing ; the system is to be prepared by bromides to contend with rough weather, and this action is to be kept up for several days, and, if necessary, during the entire voyage. Or the remedy may be taken at intervals, according to the weather and the condition of the patient.

In the *early* stages of actual sea-sickness also, where there is some nausea, head depression, constipation, and chilliness, before the stomach has reached the condition when it rejects every thing

that is put into it, the bromides may be given in this way, with the effect oftentimes of breaking up the attack. Where the stomach will not bear, or we fear it will not bear, even mild bromide of sodium, I have used injections by the rectum of the same remedy, well diluted, and in larger doses than we give by the stomach. I could recite many cases illustrative of the value of the bromides, both as a preventive of sea-sickness and as a means of breaking up the early stages of the attack. On my voyage home from Europe, during the past season, quite a number of the passengers came to me in the early stages of sea-sickness, and gave me an opportunity to try the effect of large doses of bromides. The effects, in the majority of cases, were among the most satisfactory experiments in therapeutics that I ever made, and confirmed results of my observation with myself and my family and friends who were traveling with me.

On the voyage over, I talked of the bromides with my friend Dr. Schell, of Philadelphia ; showing him how I was accustomed to use them for sea-sickness. He has since told me that while in England he met a lady who is always so sea-sick while crossing the channel, that she very much dreaded to make the journey. He prescribed for her bromide of potassium, thirty grains, three times a day two days before starting, and to keep it up for two

days after she got on board. She followed the prescription, and crossed the channel without seasickness, for the first time in her life.

In the case of a member of my own family, who is very liable to be sea-sick, I found the same results. Before starting for Europe she took the bromides with great freedom, and was not sick at all on the voyage. Before returning, she did not take the bromides to any great extent, and was attacked with sea-sickness, which I was compelled to treat in the manner I shall subsequently describe.

In England, and in Great Britain generally, and on the Continent, the moisture of the air makes it impossible to keep large quantities of bromide of sodium on hand in the drug stores. I tried in London and Paris and other cities to obtain a considerable quantity of this drug, and only one ounce could be obtained, and even that with much difficulty. The bromides of the different varieties are not used in that country as freely as we use them in America.

The great value of the bromides, in very large doses, as harmless and powerful sedatives, seems not to be understood in Europe. Even in this country, druggists tell me they are constantly getting prescriptions of bromides in ten, fifteen and twenty grains ; and physicians wonder that they do not get desired results when given in that way.

If we should give quinine, for chills and fever, in doses of half a grain, we could not expect to break up the chill, or do the patient any important good. All cases cannot be treated just alike, but in very many cases it is indispensable to push the bromides, and give large doses, if we are going to benefit the patient.

It is not always necessary to keep up the large doses many days, or for any great length of time, but it must be kept for several days, or as long as there is liability to exposure to sea-sickness.

A right and early use of the bromides, properly sustained and wisely directed by a physician who understands the use of these remedies, without anything else, robs sea-sickness of half its terrors, and will make it possible for thousands to take pleasant voyages, who are now kept prisoners at home through fear of great suffering if they should step on ship-board.

What I have here written, is a confirmation and amplification of what Dr. Lente has written on this subject ; the only points in which my scheme differs from his being, that I give a more earnest preference to the bromide of sodium, and use much larger doses than he recommends, and sometimes use it by injections, as well as by the mouth.

Atropine.—In cases where the bromides have not

been taken, or at least not taken in sufficient quantities to produce bromization, or where, from any cause, the sufferer becomes sea-sick, with symptoms of nausea and frequent vomiting, and inability to keep any substance upon the stomach, then I have been accustomed to resort to a different preparation—hypodermic injections of solution of atropia, in doses of from one two-hundredth to a twenty-fifth of a grain—enough to produce the effect of *great dryness of the throat*. When this dryness of the throat appears with marked power, the stomach is usually able to retain something, although, on account of the absence of secretions, it is very difficult to swallow. This dryness of the throat follows within fifteen minutes or half an hour after the injection. There are persons who have an idiosyncrasy against belladonna ; and in prescribing for a person with whose temperament I am not familiar, I prefer to use, at first, small doses—say one two-hundredth of a grain, and increase until I meet with the effect, dryness of the throat, and when that comes, the vomiting ceases, ability to hold something on the stomach returns, and then, if we think best, we can use the bromide again, if we have not already used them in sufficient quantities to bromize our patient.

Undoubtedly, sulphate of atropia can be taken by the mouth, and I have so given it ; but when in solution, it is colorless, and might be mistaken for

water, and it would, therefore, be dangerous to leave it in a state-room. And besides, the hypodermic injection brings the effect more quickly ; and, as is well known, in severe cases of sea-sickness nothing will be tolerated on the stomach, a drop of any fluid being rejected before there is time for absorption.

It is idle and disheartening to tempt any conditions of this kind by giving medicines by the mouth, and indeed useless ; and is the reason, I believe, in part, at least, of the failure and utter discouragement that attend most of the treatment in sea-sickness. What would be said of a fireman who should throw coal into a furnace where it was constantly dropping out through a hole in the side ? This is just precisely what is done in attempting to give medicine through the mouth in bad stages of sea-sickness.

I suppose that belladonna, in the form of extract or tincture, would give the same effect as atropia ; but, on account of its greater bulk, and also on account of the greater ease of injecting atropia, I prefer and recommend it.

I first used atropia for sea-sickness ten years ago, during a voyage to Europe. I used it hypodermically as I here recommend it, and was much pleased with its results. But on this last trip (1879) my opportunities of observing the results have been greater than ever before.

On my return voyage this year, I intentionally avoided taking much of the bromides, partly because I could not obtain the bromide of sodium in large quantities, and partly because I wished to experiment and see what could be done for seasickness, for I knew that my tendency was to be more or less sick, and I felt confident that my exemption on the voyage for America was on account of a thorough bromization.

One terrible Sunday morning, which will not soon be forgotten by those who were on board our steamer, large numbers of the passengers awoke in all the stages of sea-sickness. During the night we had struck rough seas—"the tail-end of a blow," as sailors say—and the rocking and pitching were more severe even than in the height of a great storm. Very few, even of those who were not sick, had had any sleep. On trying to get up I found I could not raise my head without vomiting, and the tincture of capsicum, which is beneficial in premonitory stages, was powerless. An arrangement for hypodermical injection of atropia being near at hand, I injected a quantity, which, in half an hour, made my throat exceedingly dry. I was soon able to get up and use the same treatment on my friends. I was also able to take some light breakfast, although there was some difficulty in swallowing on account of the dryness of the throat, which, how-

ever, was a light matter. During the day I found I could not see to read on account of the paralysis of the muscles of accommodation.

These physical effects, however, caused me 'no annoyance. What I ate was retained; but I had but little desire for eating. I also improved the opportunity to take large doses of bromide of potassium, which I had no difficulty in retaining on the stomach. I had no more trouble during the rest of the voyage, although the weather was rough, and opportunity was given me to treat others in the same way.

The dryness of the throat, and the difficulty of swallowing caused by the atropine were of temporary duration only, passing away in the course of half a day, and they are no objections whatever against the use of this remedy.

I have not seen, as yet, any nausea, vomiting or other unpleasant symptoms after the use of atropine pushed to these effects; but in the case of an idiosyncrasy such effect may follow.

In regard to the degree of effect, it should be understood that just sufficient to produce decided dryness of the throat is all that is needed, and it is always well to begin with a small dose on a patient with whose temperament we are unacquainted.

Caffeine.—The symptom of headache, especially

sick-headache, which is observed so often in sea-sickness, is treated most successfully by finely powdered citrate of caffeine, in doses of two or three grains, repeated every hour until the desired effect is produced. I prescribed this on my last voyage to Europe. I saw a number of cases where sick-headache, with severe pain in the eye and on the brow, nausea, and pain in the back of the neck—precisely the same symptoms as are felt in the sick-headache, of which we see so much on land—and I at once treated them with citrate of caffeine, finding the same rapid, brilliant, and in every way satisfactory results that we often meet with on land.

Caffeine should be finely powdered before using, and placed dry on the tongue, but may be washed down with a little water. Even when there are symptoms of pressure and fullness, indicating cerebral congestion, this remedy acts well. It has one great advantage, too, in the treatment of sick-headache on land—that it can be taken when the stomach is very irritable.

There are cases where a dose of half a grain is sufficient; but as the many failures with caffeine result from timidity in its use, I prefer to begin with two or three grains, and I have never seen or heard of any serious effects from its use in these quantities. The action of citrate of caffeine in sick-headache is most rapid and beneficial and

highly satisfactory for temporary relief, as I have elsewhere pointed out. When it succeeds it seems to lift the pain and distress right off from the sufferer, particularly when given in the early stages.

I believe, also, from my experiments, that it has a not unimportant future before it for the relief of other symptoms of sea-sickness. I am convinced that it does more than relieve the headache, and that it fortifies the system against the other symptoms also. There are temperaments, however, with which it does not agree, and who are not helped by it, or who soon wear it out.

But the citrate of caffeine has this disadvantage, that when given in the latter part of the day it keeps some patients from sleeping. It is, therefore, not well to give it when it is expected that the patient will try to sleep shortly afterwards.

I much prefer to have the citrate of caffeine finely powdered before using, for the reason that it is more concentrated, and I am not sure but it has more effect this way; but in regard to that I want more evidence. I do not seem to get as much effect from even large doses of caffeine when used in the form of flaky crystals, as it is usually sold from the shops. I have always been accustomed to use it in the finely pulverized form, and do not

usually weigh or accurately measure it when I give it. In prescribing it, it must, of course, be prescribed in accurate doses.

Caffeine, as is well known, is the active principle common to that family of plants commonly known as tea, coffee, guarana, and the like, but it is in all respects superior to any one of these, for the purpose of relieving sick head-ache or sea-sickness. Its effects are temporary ; but in sea-sickness only temporary effects are needed.

By the above plan of treatment, sea-sickness is deprived of a large part of its terrors. This scheme of treatment will, I am sure, make as complete and satisfactory a revolution in the management of sea-sickness, as the use of caffeine, cannabis indica, and various other remedies have recently made in the treatment of sick-headache. Ten years ago sick-headache was considered an unrelievable disease. We can now break up or relieve nearly every case. So hay-fever, which, but a few years ago was utterly unrelievable by treatment or by travel, is now, in very many cases, completely avoided by a flight in time, to the mountains or forests, and arrested, or relieved of its direst sufferings by medical treatment, for those who are obliged to stay at home. Similarly, neurasthenia (*nervous exhaustion*), but a few years since was forced to get well of itself, if at all, but is now by various treatment—hygienic and

medical—brought within the domain of curable and quickly relieviable disorders.

What has been done for sick head-ache, for hay-fever, and for nervous exhaustion, can also be done for sea-sickness by the plan of treatment above proposed.

There are some patients with all diseases, who, from mental or physical peculiarities, will not yield to any treatment. Some are resolved not to get well of anything they have, and some persons are constitutionally so susceptible in every direction that they cannot bear remedies that everybody else can bear. When persons having these characteristics are sea-sick, it is quite likely that they will resist, in a greater or less degree, every mode of treatment ; but I believe that these cases will be exceptional. Much of the suffering from sea-sickness, as much of the suffering from sick-headache, from hay-fever, from inebriety, from neurasthenia, is, in the present state of medical science, needless suffering. If there are those who for months and years are prisoners to these disorders, it is not because science has no means of relieving them ; it is because they, or their physicians are unfamiliar with, or are unwilling to use, those methods that are almost sure to be of value to them.

Sea-sickness, like all other diseases of the nervous system, should, when practicable, be treated

by a physician ; its diagnosis should be made by a physician, and the management of the case, so far as possible, should be, when severe at all, in the hands of those who have made themselves, in a degree, experts.

The time is to come when those who go to sea for duty or pleasure, will, in cases of liability to sea-sickness, consult their physician, just as they now consult him when entering a region subject to malaria or yellow fever, and shall receive, instead of jokes or indifference, careful and systematic directions for their voyage.

Cannabis Indica.—For the headache symptom of sea-sickness one of the very best of remedies is cannabis indica, in doses of half a grain. The pills which are now made are a convenient way of giving this. The dose may be repeated until some effect is produced. It has the advantage over caffeine that it does not prevent sleep, but rather induces it, and can, therefore, be given late in the day, when caffeine is not advisable. It is not, however, as powerful as caffeine. I use it in special cases with very good success. But the bromides, or the bromides and atropine combined, will make unnecessary, for the majority of cases, both the citrate of caffeine and cannabis indica. There are, however, and always will be, many who have neglected to bromize them-

selves, or do it incompletely, and so suffer, more or less, from sea-sick symptoms that caffeine or cannabis indica can quickly relieve.

The constipation which is so common a symptom at sea, can be corrected by any mild laxative, but those who use bromide and atropine treatment would not be so likely to be troubled with constipation. In this respect, as in all respects, there is far too much attention given to the stomach and bowel symptoms, and far too little to the central-nervous system that presides over all these functions. Constipation, for a few days, is a slight matter if a person be otherwise comfortable. The complicated laxative prescriptions are needless.

On my voyage to Europe last year, I became acquainted with a family, two of whose members, the mother and daughter, suffered all the time from sea-sickness in its various stages, and with its different symptoms, from leaving New York until reaching Queenstown; although the weather was at no time very severe. They were at no time well, and spent a considerable portion of their voyage either in their berths or in a state of despair on deck. Unfortunately, I did not have a sufficient quantity of medicine to supply any outside of my own family, and the surgeon of the ship, when appealed to, only sent a sufficient quantity of the bromide of potassium for a single dose, stating that it was all

that he had. I was, however, enabled to give them much relief of the head symptoms by the citrate of caffeine. It seemed to me that this family presented fair subjects for experiment with the bromide treatment alone. I therefore wrote down special directions for them, what to do on the return voyage, for again and again and again, the ladies of the family declared that millions of money would not induce them to take another sea voyage, so constant and severe had been their misery. Since their return, they reported to me that they did as I directed—purchased a pound, I think, of the bromide of potassium in Europe, being unable, like myself, to obtain any large quantity of bromide of sodium, and the mother began to take it before getting on board the steamer, and kept on taking it, more or less, during the voyage, and was not sea-sick at all during the entire voyage, although it was very much rougher than the preceding one. She kept herself mildly bromized, somewhat weak, easily disposed to sleep, night and day, and from sea-sickness free entirely. She used, I believe, no other treatment whatever. The daughter, like the mother, was sick all the way over on the first voyage, and she declined to take the bromide, because she heard me say that sometimes it produced bromic acne, and she was sick all the time, or nearly all the time, as on the previous voyage.

Here, then, was as fair a single experiment as could be made ; the two persons were of the American nervous temperament, fairly representing the American woman in organization and nervous susceptibility, and specially susceptible to sea-sickness, even in mild weather. The bromic acne which the daughter feared, might have been prevented by the use of a few drops of Fowler's solution. From two to five drops with each dose of the bromide, will usually be sufficient to prevent the appearance of this acne, and even if the bromic acne does appear, it disappears, and generally within a few days after the medicine is suspended.

During the past winter—1880—a number of my friends have gone South by sea, to Florida, and to the Carolinas. Several of these were ladies, who had taken the voyage previously, and who had always suffered from sea-sickness. Two of these persons took the bromide treatment before and during the voyage. One took the treatment thoroughly, and was not at all sea-sick ; the other did not have a sufficient quantity of medicine, and became sick the latter part of the voyage, although she was entirely or approximately well the first half. These, also, were as fair experiments as could well be made.

During this past winter, I returned from a trip to the South by way of one of the Savannah

line of steamers. I took, as I always do, my own medicine, having supplied myself with the bromide of sodium before leaving New York, feeling doubtful whether I might get it in the Southern cities in quantities sufficient for my purpose, and feeling also quite sure that I should not be able to find any on board the ship—as I did not. I experimented not only on myself, but on two passengers, both ladies. Part of the voyage the sea was rough, and a number were quite sick. From my previous experiments at sea, I am sure that I should have been sick at least half the time had I not taken the precautions with the bromide, and with the atropia. On this voyage, I combined the atropia with the bromide in the same tumbler, and found that they worked very well, indeed, producing the dryness in the mouth and relieving the symptom of nausea. I did not take much precautionary treatment, for I felt sure that I could control the sickness if it came on, and when the sea became very rough and a slight feeling of nausea came on, I took a larger dose of bromide with the atropia, which stopped it entirely, and I was not troubled any more during the voyage.

The ladies who were sick had taken, of course, no precautionary treatment, but were at once relieved by the bromide and atropia combined. In one instance, however, the sickness had gone so far that it was impossible to keep even anything on the

stomach, and I was obliged to depend exclusively on the atropia, which was injected hypodermically. In the case of both these ladies, the bromide, although given for but twenty-four hours, produced some weakness and drowsiness, and I have no doubt whatever that had they taken the treatment before getting on board the steamer, and kept it up systematically, they would neither of them have suffered at all from sea-sickness.

It is imperative, in order to get the good effects of this plan of treatment, that it be kept up not only before sailing and the first day of sailing, but through the whole voyage, more or less—though not always with regularity—and especially if the weather is rough; and for the majority of persons who are sensitive to the sea, it is best to keep it up anyway. This treatment I have tried thoroughly, and I cannot repeat too often or too earnestly this injunction.

Some friends of mine this year went to Cuba, and carried out my plan of treatment in part; that is, took doses of the bromides before sailing, but stopped after getting on ship, and some of them were sick, more or less. Had they kept it up, they might have been free from any symptoms, since they all of them bore very well the bromide treatment the short time that they used it. None of them were bromized.

It should be noted here that the essential thing is the mild bromization of the patient. It is the effect that we are after more than the dosage, and the dosage should be given large enough and frequently enough, and the treatment should be kept up long enough, to produce this mild bromization so long as it is needed. In the above cases, if I had been on board, I know, from my previous experience, that I could have helped them at once by means of atropia.

My friend, Dr. L. Bolton Bangs, of this city, tells me that a relative of his is so sensitive to bromide of potassium that five grains even will make him sleepy. The possibility that in giving any of the bromides to any person for the purpose of preventing sea-sickness, we may strike some idiosyncrasy of this kind, enforces the necessity of this rule: To always begin with moderate doses, and gradually increase as we find that there is no especial idiosyncrasy against it. The severe symptoms of bromism, such as thickness of speech, very profound exhaustion, very fetid breath, and very much disturbed digestion, can usually be avoided by a careful watching of one's self. It is not, I think, necessary to produce any very unpleasant symptoms of bromism in order to prevent sea-sickness. It is, however, quite possible—indeed probable—that there may be some individuals for whom

only profound bromism would be sufficient; and there are others, also, who would require to be treated by the hydrate of chloral as well as by the bromides, in order to make sure of relief or of prevention.

Hydrate of Chloral.—Chloral is a remedy which has been used for sea-sickness, in some cases with a very good degree of success. It can be used both in wafers of five or ten grains each, or in a solution by itself, or in combination with any of the bromides, or it may be used by injection into the rectum. When, however, one is thoroughly sick, or beginning to be sick, it is impossible to take chloral by the mouth. It is a remedy, under such circumstances, especially adapted to invite vomiting. Hydrate of chloral is really a stronger bromide, being more of a narcotic, while the bromides are sedatives. In cases where the bromides do not act, either through not being taken in sufficient quantity or from personal idiosyncrasy, it would be well to combine the chloral, either at the same time or as an alternative. A person who could not sleep through a stormy night at sea, would be pretty sure to sleep under a moderate dose of chloral combined with the bromide.

The great trouble with chloral is, however, that it is not a domestic remedy. It is not a drug that

is to be recommended for daily or long-continued use ; there is danger of the habit of taking chloral, with the symptoms of chloralism. In that respect it is very different from the bromides, which are sedatives and not anodynes or narcotics. The bromides are far safer to entrust into the hands of patients or of physicians who are careless or unskillful. Chloral, however, acts on the nervous system in such a way as to produce an effect that is desired during sea-sickness for a preventive of sea-sickness ; it allays the sensibility of the brain and spinal cord. I should not hesitate in my own person, or a member of my family, or any patient, indeed, to use chloral alone, or in combination with the bromides if necessary. Indeed, I should prefer to use it part of the time if I were on a very long voyage where it was necessary to keep up the bromism. It might be used occasionally—a quarter or half the time—to prevent the excessive and unpleasant effects of the bromide when continued too long. To depend, however, on chloral administered by the mouth as a means of relief of sea-sickness, after the attack is upon one, is as unscientific as it is to depend on alcohol, whiskey, champagne, brandy, and the like ; or nitrite of amyl, or capsicum, or acid phosphate, or creosote, or any of the thousand things that have been used without any satisfaction, or but slight satisfaction, against this annoying disease.

Remedies to be avoided.—There are a large number of remedies which have been used for sea-sickness, and which may, in certain stages and in some cases, have a slight value for some of the symptoms, though perhaps scarcely enough to reward one for the trouble of bothering with them ; these remedies are largely displaced by the method of treatment above proposed. Phosphoric acid, and Hosford's acid phosphate ; and capsicum in one or two drop doses, have been used, and all do have a certain power in the milder stage of the disease ; but if the above treatment works well, its effects so far surpass anything that can be obtained by these agents, that they may be dispensed with or not thought of. Morphine or opium, in any form, is not to be used in sea-sickness ; whatever temporary alleviation it may cause, is followed usually, or in a majority of cases, by bad reaction. About the worst things to use in sea-sickness, are precisely those which are most used—that is, liquors and champagne. They do no good, and do much harm ; the only advantage that champagne has, being that it is the least bad of all the alcoholic liquors, and in small quantities does not so much harm, and will, perhaps, stay a little longer on the stomach ; but against a full attack of sea-sickness, it is the merest waste and absurdity to use it. Electricity is also

of value in sea-sickness, when applied through the stomach and spine, and Dr. Lente urges this method, which he has found very successful in vomiting of all kinds. I have no doubt that, if used, in many cases it would relieve some, but, like the ice-bags, it belongs to the unpracticable things ; even if it did good, few would take the trouble to use it. The essential thing in the treatment of sea-sickness is, that the method used must be practical ; that it must prevent the disease, or keep it down so thoroughly that vomiting does not occur. After once a person is sick, it is of no use to talk to him of ice-bags or of electricity, or of anything that requires an effort to use for himself, or to be used by others. I have seen the time, during an attack of sea-sickness, when I would deliberate for an hour whether I would reach out my hand and open my valise, to obtain something that I wanted. It is sarcasm to suggest to a person in such a condition that he use a battery on himself, or put an ice-bag to his spine.

Among the remedies directed to the stomach, tincture of capsicum is one of the best I ever used ; a moderate quantity in a tumbler of water, diluted so as to be sharp and strong, and yet not so sharp and strong as to make it impossible to be swallowed ; placed in easy reach of the patient, and often used, will, up to a certain point, keep down and modify sea-sick symptoms.

While in the navy, I experienced great benefit from this simple medicine. When, however, the weather is very rough, or the individual very susceptible, it is thrown up at once, and loses all its power. I have tried it as thoroughly as any one can do, and should not now think of using it where I could get the bromides, atropia or caffeine.

There is one remedy which has been warmly advised for sea-sickness, which we should with all our might avoid, the nitrite of amyl. That any physician, with any experience at all with this remedy, could recommend, either publicly or privately, its adoption as a means of relieving sea-sickness, is a proof of how much the study of this subject is needed in our medical schools. The London Lancet, within a few years, has been filled with encomiums of this remedy by the ship surgeons, who have had ample opportunity to test it, and who ought to have learned, by their own observations and studies, that of all the remedies for this disease nitrite of amyl is one of the greatest failures. First of all, the odor of the remedy itself is enough to excite the symptoms in those predisposed to them. Even if it were a specific for the disease, that alone would make it impracticable; but aside from the odor it is a most uncertain and unsatisfactory means of relieving the disease.

In some stages it does, I admit, give immediate

temporary relief; but it must be often repeated, and soon the patient becomes disgusted with it, and will not bear it any longer. I would only use it in those cases where I could not get one of the other remedies I have mentioned. Both the effects of nitrite of amyl, and the theory of cerebral anæmia, on which it is based, are of that one-sided character for which our scientific discussions are too noted.

This conclusion in regard to nitrite of amyl is based upon my own experiments—and the surgeons of our Atlantic steamers, so far as I have been able to consult them, agree with me. One of these surgeons told me that one dose excited temporary paraplegia. I do not, however, object to nitrite of amyl because it is a dangerous remedy, for it is generally safe to use it; but I object to it because it is a failure, like the theory on which it is advocated, and because we have something much better.

Another plan of treatment that we should with all our energies resist, is the use of cathartics and purges, calomel or vegetable, during a voyage, or before a voyage. There are thousands who purge themselves with blue pill, and podophyllin just before they start upon a voyage, and think that they are doing good service. All this is based on the theory that sea-sickness comes from biliousness, and biliousness comes from bile, either

in excess or deficiency, and that purging drives out the bile, or does something else that relieves sea-sickness. This method, which still has a great hold on the people, is unphilosophical, useless, and, in some cases, positively injurious.

It may be argued against the above plan of treatment that it is or may be somewhat risky ; that the remedies are strong remedies ; and that it would be better to use milder and more gentle preparations. The reply to this is very simple : sea-sickness is a very powerful disease, and demands powerful treatment, and will never yield to anything but powerful treatment. The mild and mincing remedies, the dilly-dallying modes of treating this disease, have been tried for centuries, and they have failed utterly, and they always will fail. Nothing is to prevent sea-sickness and break it up, except something which makes a very powerful impression on the nervous system. But although this treatment is powerful, it is not dangerous, except when in dangerous hands. It is one that I use on myself ; that I use on the members of my own family, and that I would not hesitate to use, and do use, under my own eyes, on any sensitive and delicate American man or woman.

It will be observed by those who are familiar with the philosophy and treatment of functional

diseases of the nervous system in general, and with the action of the remedies mentioned in this essay, that I treat sea-sickness just as I treat any other functional nervous disease. For the plan of treatment here proposed, I claim that it is both rational and successful ; that is, in harmony with our theory of the disease, and practically successful when carried out on shipboard and before entering upon the voyage. Here, for once, in medicine, theory and practice agree. In many cases of disease we are very successful in our treatment, although we give no reason for the treatment ; in other cases, we have by theory a most excellent plan of treatment, which, carried out in practice, is of no value.

The question of the proportion of people that can be entirely saved from sea-sickness by this plan of treatment, will be settled by a large experience, by the accumulative observations of physicians and of sufferers who shall, in future years, carry out the suggestions here made. So many remedies have been offered for sea-sickness by those who chance to have had a few fortunate results under their observation, that there is a just and inevitable skepticism in regard to anything that can be presented. In reading the accounts of what has been done by nitrite of amyl, for example, as they first appeared in the London Lancet and other journals, one might suppose that really, at last, we had found a

specific for this disease, but a very short experience on shipboard in rough weather would soon dissipate this idea. There has, however, been sufficient experience with the plan of treatment here proposed, under the eyes of different observers and under different conditions, to make it pretty safe to predict that those who carry out this plan of treatment in its entirety, with judgment and patience, and who are not speedily or very greatly relieved, will be in the minority.

The Hygiene of Sea-Sickness.—One important hygienic suggestion while at sea, is to keep something on the stomach all the time, if possible. I have seen the time when, after having been at sea steadily for many months, I would be slightly sick if breakfast were long delayed. It is, therefore, wise for sensitive persons to take something before getting out of their berths, whether they feel sick or not. The question that sea-sick sufferers, or those who fear sea-sickness, always ask is, whether they shall go on deck or stay in their berths. One advantage of the plan of treatment here proposed is, that it makes but little difference whether we stay on deck, go into the dining-room, or remain in our berths. The patient can do what is most agreeable to him. The bad air of poor state-rooms is, no doubt, one of the excitants

of sea-sickness; but it is not the chief excitant, and in cases where the bromides, atropia and caffeine work well, the patient can suit his caprice in this matter. For those who feel sick and weak the most agreeable and comfortable place, on the whole, is the state-room, where they are kept warm and quiet, where they can walk, talk or read—or do nothing—at their option. When they take much bromide they will feel sleepy most of the time, and, on shipboard, all the time given to sleep is so much saved from monotony and discomfort.

Equally needless, as well as impracticable, is the advice which has been given to get into the berth and lie down, with the head low, before the ship leaves the dock, and keep that position. Patients, who thoroughly carry out the mode of treatment I have recommended, can stay on deck, or keep in their state-rooms, as they may desire—in short do what is most pleasing to them. The custom of tying a band tightly around the stomach is a very good one, but is not necessary, as a rule; of itself alone it has no great power, and in severe cases no power at all. Any one depending upon it would be likely to be disappointed. It would, however, be entirely proper to use it in connection with other remedies.

Cold, and Taking Cold, at Sea.—A great element of discomfort at sea, especially to those who are

more or less sea-sick, is cold. The ocean, particularly the northern Atlantic, is never warm. In seasickness, the circulation being very much disturbed, creeping chills passing over the body, extra clothing is very much needed. It is impossible to take an excess, on going to sea, of overcoats and wraps, and especially of the thickest under-clothing, and these will be needed, not only on deck, but in the state-rooms, and usually throughout the whole voyage. Many who are not sick are yet kept in constant misery by being cold, and the sick themselves have their misery greatly aggravated by this.

The arrangements of ships are for the average, not for individual exceptions. So those who are sensitive to cold and unprovided with clothing must expect to suffer.*

A great advantage of the bromization when the system is completely under its influence is, that it renders the person less susceptible to cold, as well as to all other irritants.

There is a delusion that people do not take cold at sea when off soundings. This delusion has this basis of truth, that in warm climates, at sea, one can

* While this book was in preparation, one of my patients, who was planning a first voyage to Europe, asked me how he should dress. "Just as though you were going to the North Pole," was the reply. This advice applies to all persons who visit Europe in winter or summer.

endure great exposure without taking cold ; and, generally speaking, at a distance from shore strong persons are less liable to take cold on exposure than they are on land. But sensitive persons may take cold a thousand miles from land just as easily as they do at home, and find it just as hard to get rid of it. One of the very worst colds I ever had in my life was on the Atlantic Ocean.

The best preventive of colds is thick under-clothing ; two or three sets, if necessary, at once ; worn night and day, no attention whatever being paid to all the talk of sailors and travelers as to the exemption at sea from taking cold.

One fact is beyond all question—that is, that on landing, or coming near land after a voyage, there is very great liability to take cold.

During the war I was nine months at sea, without once going ashore ; and, on approaching New Orleans, I was told by one of the old sailors that we should be very liable to take cold as soon as we landed. I took every possible precaution myself, and asked the officers and men to do the same, to see if we could possibly avoid this, but, in spite of all these precautions, I believe nearly every person on that ship took severe colds, some even extending, to bronchial difficulties, lasting for several weeks, so that I was obliged to treat them.

When passengers land in England or Ireland,

from our Atlantic steamers, they are very liable to take cold in a few days, if not at once, and it would appear that in some cases no ordinary precautions are of any value, especially if the weather, as is usual in Great Britain, is wet, damp and cold. Aside from the regulation of the clothing, the use of the bromides, or very small doses of opium and camphor, for a few days, are the best remedies I know of as a prevention against taking cold.

Diet in Sea-sickness.—The diet in sea-sickness, like the other matters of hygiene, is not so solemn a matter as many believe. If a person be kept under the influence of bromides or atropine, he can hold something on the stomach, as a rule, at least in very many cases; and although, on account of the dryness of the throat, he may have some difficulty in swallowing, yet he does succeed in swallowing something. It is not as well to get up in the morning and go long out without anything to eat early; frequent light meals are to be advised; but in cases where the treatment results satisfactorily, the diet can be arranged to suit our moods and convenience, and we can take our meals on deck, or in the state-room, as may be convenient.

I close with a practical suggestion, without which all that I have said will be of little service,

namely : that before going to sea, we should always take with us the remedies we are to use. There is no ship that sails upon the ocean, that carries remedies of any value in sea-sickness ; and not only that, but it is impossible to get in Europe the bromide of sodium, the best of any of these remedies, or even cannabis indica, in a convenient form. If I were going to Europe to-morrow, I would take with me sufficient quantities of bromide of sodium and solution of atropia, with a hypodermic syringe, and also of caffeine and cannabis indica, to last me on the voyage over, and on the return, also. Very true the caffeine can be obtained in Europe, but we must search for it in the leading drug stores ; and cannabis indica can be obtained also, but it is not put up in a convenient form, coated with gelatine, as we use it here. It cannot be repeated too often that it is useless to recommend for sea-sickness any remedy that is disagreeable, or hard to take or apply. It is the very essence of the disease that it always fights against a bad tasting drug, or any kind of unpleasant procedure.

On my voyage from Savannah to New York, on the steamer "City of Savannah"—which is one of the newest and finest steamers on which I ever sailed, and which is thoroughly furnished throughout with all other things that passengers require, except medicine for the sea-sick—I was requested by the

captain to see one of the officers who had injured himself, and was referred to the medicine-chest, which I found to be full of liniments, and pills, and plasters and the like—the same as might have been put up one hundred years ago. There was not in the whole contents anything that would have relieved or helped a single sea-sick sufferer, and the cases on the ship that I treated, were supplied from my own stores that I brought for the purpose.

On board the steamer "City of Savannah," my attention was called to an improved form of swinging berth (Huston's) that may be of some assistance to the sea-sick, and comfort to the well. I occupied one of them on the short voyage from Savannah to New York, but could not determine with certainty in regard to its value. For those who are well it is certainly a very agreeable luxury, and it will probably be of some service to the sick.

RECAPITULATION.

The facts and reasonings in this essay on which I lay especial emphasis, may be thus epitomized :

1. Sea-sickness is a functional disease of the central nervous system, mainly of the brain, but in some cases of the spinal cord also. All the symptoms—whatever they may be—from nausea and vomiting through all the milder and less-known symptoms, come from the brain and spinal cord ; and are the results of a series of mild concussions.

2. The symptoms of sea-sickness are,

(1st.) Headache.

(2d.) Backache.

(3d.) Nausea of various grades without vomiting.

(4th.) Vomiting.

(5th.) Pain in the eyes.

(6th.) Constipation and diarrhœa.

(7th.) Menstrual suppression.

(8th.) Hopelessness and mental depression.

(9th.) Abnormal appetite, of a temporary character.

- (10th.) Neuralgic pains, chilliness and flashes of heat.
- (11th.) Insomnia or sleeplessness.
- (12th.) Nervous exhaustion—(neurasthenia.)

In very many cases there is no nausea or vomiting, the symptoms being confined to headache, oftentimes precisely like headaches we have on land. The hopelessness or mental depression of sea-sickness is the direct result of the cerebral irritation and disturbance; cerebral exhaustion from any cause, temporary or permanent, causing this in all functional nervous diseases, particularly in neurasthenia or nervous exhaustion. The neurasthenia and the nervous exhaustion resulting from protracted sea-sickness combined with anæmia from loss of nourishment, may, in some cases, lead to death, or if not, to long-continued depression of the vital forces, from which the patient may not recover for months, if ever.

3. Sea-sickness is an evil, just as any other form of sickness is an evil, and it should be dreaded and avoided by every means, just as other forms of sickness are dreaded and avoided. An attack of typhoid fever may clear out the system so that a person is permanently better therefor, but no one on that account seeks an attack of typhoid fever. Much of the apparent benefit from sea-sickness is the con-

trast between the misery one suffers while undergoing the attack and subsequent improvement and the general tonic results of the sea air. *All the good of a sea voyage can be obtained without suffering sea-sickness.*

4. The cause of sea-sickness is purely physical or mechanical—a series of mild concussions—the agitation of the nervous system by the movements of the ship. It is a disease that attacks animals—dogs, horses—and even birds or fowls, and attacks human beings of all races, but is most likely to attack, and is most severe in its attacks on those who are most sensitive and nervous. Therefore, Americans are greater sufferers than Europeans, and women suffer more than men, and delicate women more than strong women. The extremes of life—youth and old age—are less likely to suffer from it than those between the ages of 15 and 60.

5. Sea-sickness can, in the majority of cases, be either entirely prevented or very greatly relieved by proper treatment. The suffering of sea-sickness is very largely needless suffering. The exceptions will be mostly those who have some constitutional idiosyncrasy against the remedies that are best adapted to relieve it, or who are so very susceptible to the motion of the ship that the influence of all medicine is overwhelmed.

6. The treatment of sea-sickness consists, (1st.) In the preliminary use of the bromides, preferably in large doses, preferably the bromide of sodium. This should be taken from one to three days before sailing, so that the individual may become mildly bromized before reaching rough water, and this mild bromism should be kept up during the voyage if necessary.

(2d.) In the use of sulphate of atropia in doses of from one one-hundredth to one twenty-fifth of a grain, hypodermically or by the mouth, repeated with sufficient frequency to produce great dryness of the mouth. This treatment may be used either alone or in combination with the bromides. This is a remedy of such power that it cannot be indiscriminately recommended to the laity, but all physicians who advise patients before going to sea, and all surgeons on the steamers, should be prepared to use it. In some cases—perhaps in the majority of cases—atropia in skillful hands is sufficient of itself without the bromides ; it prepares the way for the bromides, and enables the stomach to bear them and bear food and other medication during the attack.

(3d.) The powdered citrate of caffeine, in two or three grain doses, for the sick-headache.

Pills of *cannabis indica*, of one-half or one-third of a grain, are excellent for relieving the sick-headache of sea-sickness, and have the advantage

over caffeine that they do not cause sleeplessness, which caffeine would sometimes do when used in the latter part of the day.

Those who carry out this line of treatment properly and thoroughly—and it is better that it be done under the direction of a physician who well understands the use of these remedies, if possible—may do very much as they please in the hygienic management at sea. They may spend their time in their berths or on deck, as may be most agreeable to them. They can eat what is most attractive at the table and in their rooms, and need spend no time or force in discussing the useless and unsatisfactory question whether it is better to be on deck or below. Those who are under the influence of the bromides find it most pleasant to be in their berths, and will sleep much of the time, by day as well as by night, and there can be no better way of passing a long sea voyage than in sound sleep, provided it is brought about, not by any narcotic or stupefying agent, but by a sedative, which, in good hands, wisely used, and stopped in proper time, except in the case of individual instances—which must be watched for carefully by the physician—cannot do any permanent harm.

NOTE.

WHILE this work was passing through the press, I heard from my friend Dr. Hutchinson, of Providence, that he had found a certain prescription very useful in sea-sickness :

I wrote to him asking for the details. He complied in the following letter :

PROVIDENCE, R. I., April 30, 1880.

DEAR DOCTOR :

I would have sent you in my last the combination which proved so remarkably successful on my last trip to the West Indies, had not its effect seemed so ludicrously disproportionate to its apparent potentiality. My party was nine in number—three ladies and two children among them. Of these, two gentlemen, one lady, and one child were terrible sufferers with sea-sickness—the lady being at times delirious from functional cerebral excitement. Into an ordinary tumbler, half full of water, I put ten grains of bromide of sodium, with one-tenth grain of powdered ipecac, sat down by the bed-side, and gave a tea-spoonful every ten minutes.

Inside of an hour, all vomiting and nausea had disappeared, and the lady was asleep quietly. When she awoke, although the sea was the same as before,

the sickness did not return, and she finished the voyage to Santiago de Cuba pleasantly. The same effect followed in the other cases, and as we were out almost two months, cruising around the island, I had an excellent opportunity to test the remedy. In no one instance did it fail.

With, I presume, more experience at sea than usually falls to the lot of physicians, this combination is the first that has ever proved of the smallest benefit in this contemptible disease.

It is proper to say that in no case did the patient know what he was taking.

I may add that, since my return, I gave the formula to Dr. Bogman, of this city, and he has used it with the happiest results in a case of functional vomiting of pregnancy, which had utterly resisted everything else. If this statement can be of any value to you, my dear Doctor, you are at liberty to use it.

Sincerely your friend,

W. F. HUTCHINSON.

DR. GEO. M. BEARD

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